MISSOURI DEPARTMENT OF TRANSPORTATION
MATERIALS ENGINEERING
Jefferson City, Missouri

Test Method
MoDOT T28
DETERMINATION OF POTASH IN FERTILIZER

1.0 SCOPE

1.1 This method describes a procedure for determining the percent Potash in Fertilizers by Atomic Absorption Spectrophotometry.

2.0 REAGENTS AND APPARATUS

2.1 Atomic Absorption Spectrophotometer conforming to the specifications set forth in ASTM C 114.

2.2 Potassium Chloride - KCl, Reagent Grade, dried at 105-110 C for several hours prior to use.

2.3 Lanthanum Oxide - La_20_3, Reagent Grade.

2.4 Hydrochloric Acid - HCl, Sp. Gr. 1.19.

3.0 PREPARATION OF STANDARD SOLUTIONS

3.1 Lanthanum stock solution: Weigh 23.46 gr. of La_20_3 into a 600 ml beaker and add 400 ml H_2O. While stirring add 40 ml HCl. Warm and stir on a magnetic stirrer until solution is complete. Cool to room temperature, filter into a 1000 ml volumetric flask, and dilute to volume.

3.2 KCl standard solution: Weigh 2.5000 gr. KCl into a 250 ml volumetric flask. Add approximately 150 ml H_2O and boil for 30 minutes. Cool and dilute to volume. Pipette 50 ml of this solution into a 500 ml volumetric flask, add 50.00 ml of the Lanthanum stock solution, and dilute to volume. This solution is 63.18% K_20.

3.3 Blank solution: Pipette 50 ml of the Lanthanum stock solution into a 500 ml volumetric flask and dilute to volume. This solution is used to set the zero point on the instrument.

4.0 PROCEDURE

4.1 Weigh 2.4900 to 2.5000 gr. of the sample into a 250 ml volumetric flask, add approximately 150 ml H_2O and boil 30 minutes. Cool to room temperature, dilute to volume, and let stand approximately 3 hours. Transfer a 10.00 ml aliquot to a 100 ml volumetric flask, add 10.00 ml of the Lanthanum stock solution and dilute to volume.

4.2 Calibrate the instrument using the Blank solution and the KCl standard solution, then determine the concentration of the sample solution.

5.0 CALCULATIONS

5.1 The method of calculating the % K_20 will vary according to the make and model of instrument used.

5.2 Report the results, to the nearest 0.1%, as follows: % Potash (K_20)